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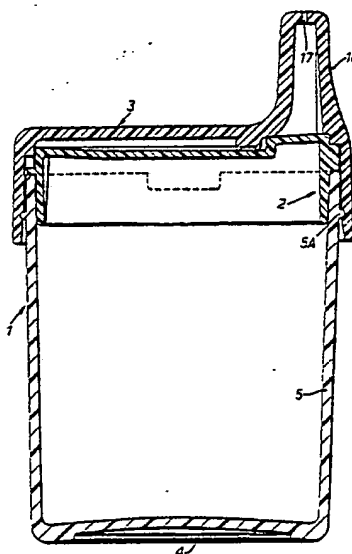
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification⁴ : A47G 19/22</p>	<p>A1</p>	<p>(11) International Publication Number: WO 85/ 04086 (43) International Publication Date: 26 September 1985 (26.09.85)</p>
<p>(21) International Application Number: PCT/GB85/00098 (22) International Filing Date: 12 March 1985 (12.03.85) (31) Priority Application Number: 8406482 (32) Priority Date: 13 March 1984 (13.03.84) (33) Priority Country: GB (71)(72) Applicant and Inventor: DENT, Jill, Lesley [GB/GB]; 23a Castle Street, Cirencester, Gloucestershire GL7 1QF (GB). (74) Agents: JAMES, Michael, John, Gwynne et al.; Wynne-Jones, Laine & James, 22 Rodney Road, Cheltenham, Gloucestershire GL50 1JJ (GB).</p>		<p>(81) Designated States: AT (European patent), AU, BE (European patent), BR, CH (European patent), DE (European patent), DK, FR (European patent), GB (European patent), JP, LU (European patent), NL (European patent), NO, SE (European patent), US. Published With international search report.</p>

(54) Title: DRINKING VESSEL

(57) Abstract

Liquid dispensers, in particular feeder cups. Such a cup comprises a liquid container (1), an orifice plate (2) and a swivel lid (3). Rotation of the lid (3) opens or closes an outlet hole (9) in the plate (2) and hence controls the flow of liquid between the container (1) and the spout (16) of the lid (3).



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DRINKING VESSEL

This invention relates to liquid dispensers generally, and specifically, though not exclusively, to feeder cups for use by babies, invalids or handicapped persons.

5 A known type of feeder cup for babies has a lid with an integral spout. A baby is able to drink from the cup by sucking on the spout but normally the spout is so designed that the baby is prevented from taking up too much liquid at a time, or from spilling a
10 substantial quantity of the contents of the cup, by ensuring that the flow through the spout is restricted. It is often desirable for such a cup to be carried about whilst filled with liquid, but this can present problems since the liquid has a tendency to leak out
15 of the spout. Whilst the lid having the integral spout could be replaced by an alternative form of lid which does not allow leakage when the cup is being carried, the use of such an alternative lid is inconvenient, particularly if the baby is to be allowed to feed at
20 frequent intervals since this will necessitate a frequent change of lids.

It is an object of the invention to provide a feeder cup or other liquid dispenser which may be carried about without risk of leakage of its contents

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and without requiring replacement of a lid by an alternative form of lid.

According to the invention there is provided a liquid dispenser comprising a container for a liquid,
5 an outlet member fitted to the container by means of which liquid may be withdrawn from the container, and flow control means which, when in an open position, allows liquid to be withdrawn from the container through the outlet member and, when in a closed position,
10 prevents liquid from being withdrawn from the container through the outlet member. The liquid dispenser may be used for a variety of purposes to enable liquid to be dispensed from bottles, containers etc. when required but it is particularly suited for use as a feeding cup for
15 infants. In this case the outlet member will be a spout provided with at least one outlet hole.

If the flow control means is placed in the closed position, leakage from a filled or partly filled cup is thereby prevented whilst the cup is being carried.
20 When the baby is to be allowed to drink from the cup, the flow control means is simply placed in the open position and the baby may then drink from the cup by sucking on the spout.

In a preferred embodiment of the invention the
25 flow control means is moved between its open and closed positions by rotating an upper cup part relative to a

-3-

lower cup part. This makes it very easy for an adult to operate the flow control means, but helps to prevent the flow control means from being operated accidentally or from being operated by a baby. The upper cup part is
5 preferably a lid which is removable to enable the cup to be filled with liquid, and the spout or other outlet member is preferably integral with the lid.

The flow control means may comprise two control surfaces which are spaced apart in the open position
10 and engage one another in the closed position, at least one aperture for the supply of liquid to the outlet member opening on at least one of the control surfaces and being closed off when the two control surfaces engage one another in the closed position. Ideally the control
15 surfaces are designed to cause progressive uncovering of the aperture to provide a variable output during operation of the flow control means. At least one of the control surfaces may be in the form of a ramp surface, the two surfaces being moved together and apart by
20 rotating an upper cup part relative to a lower cup part. It is preferred that the ramp surface should be of helical form. As the ramp surfaces slide over one another the adjoining planes give positive sealing, particularly in the closed position.

25 Conveniently one of the control surfaces is provided on a removable lid, and the other control

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surface is provided on the remainder of the cup, so that the two surfaces are opposite one another when the lid is in position. It is preferred that the lid and the remainder of the cup should interconnect by means of a locating post engaging within a slot when the lid is in position, so as to locate the two control surfaces opposite one another and allow relative movement therebetween. Ideally the slot and post surfaces will be shaped such that rotation of the lid in one direction causes the post to abut a stop surface of the slot, whilst rotation of the lid in the other direction causes the post to ride up a ramp surface of the slot so as to assist in lifting the lid away from the remainder of the cup.

15 The control surface which is not on the lid may be located on a removable plate fitted to the top of the container for the liquid. This plate may then be removed when it is required to fill the container with liquid. The removable plate may also include one or more apertures extending therethrough for the passage of liquid through the plate towards the spout. The removable plate and the container preferably include means for locating the plate at a defined orientation with respect to the container.

25 The removable plate may incorporate a drainage hole for draining liquid back into the container and the

-5-

lid includes a cover portion for sealing off the drainage hole when in the closed position. The upper face of the lid can be dished to direct liquid towards the drainage hole.

5 The invention may be performed in various ways and a preferred embodiment thereof will now be described, with reference to the accompanying drawings, in which:-

Figure 1 is a vertical cross-section through a diametral plane of the feeder cup of this invention;

10 Figure 2 is an exploded sectional view of the parts shown in Figure 1;

Figure 3 is a top plan view of an orifice plate of the cup;

15 Figure 4 is an underneath plan view of a lid of the cup;

Figure 5 is a top plan view of the lid; and

Figure 6 is a side view of the lid.

The feeder cup as illustrated particularly in Figures 1 and 2 is made from a plastics material and
20 comprises three separate moulded pieces, namely a liquid container 1, an orifice plate 2 and a swivel lid 3. The container 1 is cup-shaped having a dished base 4 and generally tapering side wall 5. An annular rib 5A is formed towards the top of the side wall 5
25 and a rectangular cutout 7 is also formed in the top edge (see Figure 2).

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The orifice plate 2 (as shown particularly in Figures 2 and 3) fits within the top of the liquid container 1 and rests thereon by means of an annularly projecting rib 6. It is held in a precise orientation with respect of the container 1 by means of a downward extension 8 of the rib 6 which fits within the cutout 7. An outlet hole 9 passes through the plate 2 and there is also a drainage hole 10 which passes through part of a central dished area 11 of the plate 2. Liquid resting on the top surface of the plate 2 will tend to collect in the dished central area 11 and then drain back into the container 1 through a drainage hole 10 when the cup is in an upright position. A slot 12 is formed in the upper surface of the lid and has a stop wall 13 at one end and a ramp surface 14 at the other end. A closure member 15 projects outwardly from the plate 2 and defines a top surface which rises helically from one end 15A to the other 15B of the closure member 15.

20 The lid 3 (as illustrated particularly in Figures 2, 4, 5 and 6) is formed with a spout 16 provided with a number of outlet apertures 17. The inner end of the spout 16 is surrounded by a surface of a second closure member 18; this is again of helical form and projects
25 downwardly to an extent which increases from the one end 18A to the other end 18B. The end 18A is at the

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end of an extension portion 18C of the closure member. A portion of the plastic may be omitted, as indicated at 19, in order to reduce possible shrinkage problems during the moulding process. An additional extension
5 18D of the closure member 18 incorporates a blanking member 20.

The lid 3 fits over the container 1 and snaps in place when an annular groove 21 fits over the rib 5A of side wall 5 of the container 1. The lid 3 also
10 carries a downwardly projecting stop member 22, the one side of which defines a ramp surface 23. This stop member 22 fits into the slot 12 in the plate 2 and limits the rotation of the lid in one direction when the stop 22 hits the end wall 13 of the slot 12. A
15 rotation in the other direction, however, causes the ramp surface 23 to ride up the ramp surface 14 and thus tend to force the lid 3 upwardly until the groove 21 snaps out of the rib 5A to enable the lid 3 to be removed from the container 1. When the cup is fully
20 assembled and the spout 16 is centralised over the closure member 15 the helical surfaces of the two closure members 15 and 18 are tightly engaged with one another so that the mouth of the spout 16 is shut off by the surface of the closure member 15 and the extension part 18C of
25 the closure member 18 additionally closes off the opening 9 in the plate 2. Furthermore the blanking

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member 20 forms a tight seal over the drainage outlet
10. Hence no liquid can escape from the container
through the spout 16. As the lid 3 is rotated the
helical surface of the extension portion 18C of the
5 closure member 18 will start to lift away from the
opening 9 and will partially uncover that opening.
Also the mouth of the spout 16 will start to lift away
from the helical surface of the closure member 15 until
there will be a direct path from the interior of the
10 container 1 through the opening 9 into the spout 16.
During initial stages of rotation of the lid 3 a
progressive opening will be achieved so that the cup
can have a variable output until the fully opened
condition is reached. Rotation of the lid 3 also
15 causes the blanking member 20 to uncover the drainage
hole 10.

CLAIMS

1. A liquid dispenser comprising a container for a liquid and an outlet member fitted to the container by means of which liquid may be withdrawn from the container, characterised by flow control means (15, 18) which, when in an open position, allows liquid to be withdrawn from the container (1) through the outlet member (16) and, when in a closed position, prevents liquid from being withdrawn from the container through the outlet member, which is preferably in the form of a spout (16) with at least one outlet hole (17).
2. A liquid dispenser according to claim 1, further characterised in that the flow control means (15, 18) is moved between its open and closed positions by rotating an upper cup part (3) relative to a lower cup part (2), and preferably the upper cup part (3) is a lid which is removable to enable the cup to be filled with liquid and which may be integral with the outlet member (16).
3. A liquid dispenser according to claim 1 or claim 2, further characterised in that the flow control means (15, 18) comprises two control surfaces which are spaced apart in the open position and engage one another in the closed position, at least one aperture (9), for the supply of liquid to the outlet member (16), opening on at least one of the control surfaces and

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being closed off when the two control surfaces (15, 18) engage one another in the closed position, at least one of the control surfaces (15, 18) preferably being in the form of a ramp surface, ideally of helical form, the
5 two surfaces being moved together and apart by rotating an upper cup part (3) relative to a lower cup part (2).

4. A liquid dispenser according to claim 3, further characterised in that the control surfaces (15, 18) are designed to cause progressive uncovering of the
10 aperture (9) to provide a variable output during operation of the flow control means.

5. A liquid dispenser according to claim 3 or claim 4, further characterised in that one of the control surfaces (18) is provided on a removable lid (3),
15 and the other control surface (15) is provided on the remainder of the cup (2), so that the two surfaces are opposite one another when the lid (3) is in position, the lid (3) and the remainder of the cup (2) preferably interconnecting by means of a locating post (22) engaging
20 within a slot (12) when the lid (3) is in position, so as to locate the two control surfaces (15, 18) opposite one another and allow relative movement therebetween, the slot (12) and post (22) surfaces ideally being shaped such that rotation of the lid (3) in one direction causes
25 the post (22) to abut a stop surface (13) of the slot, whilst rotation of the lid (3) in the other direction causes the post (22) to ride up a ramp surface (14) of

-11-

the slot so as to assist in lifting the lid (3) away from the remainder of the cup (2).

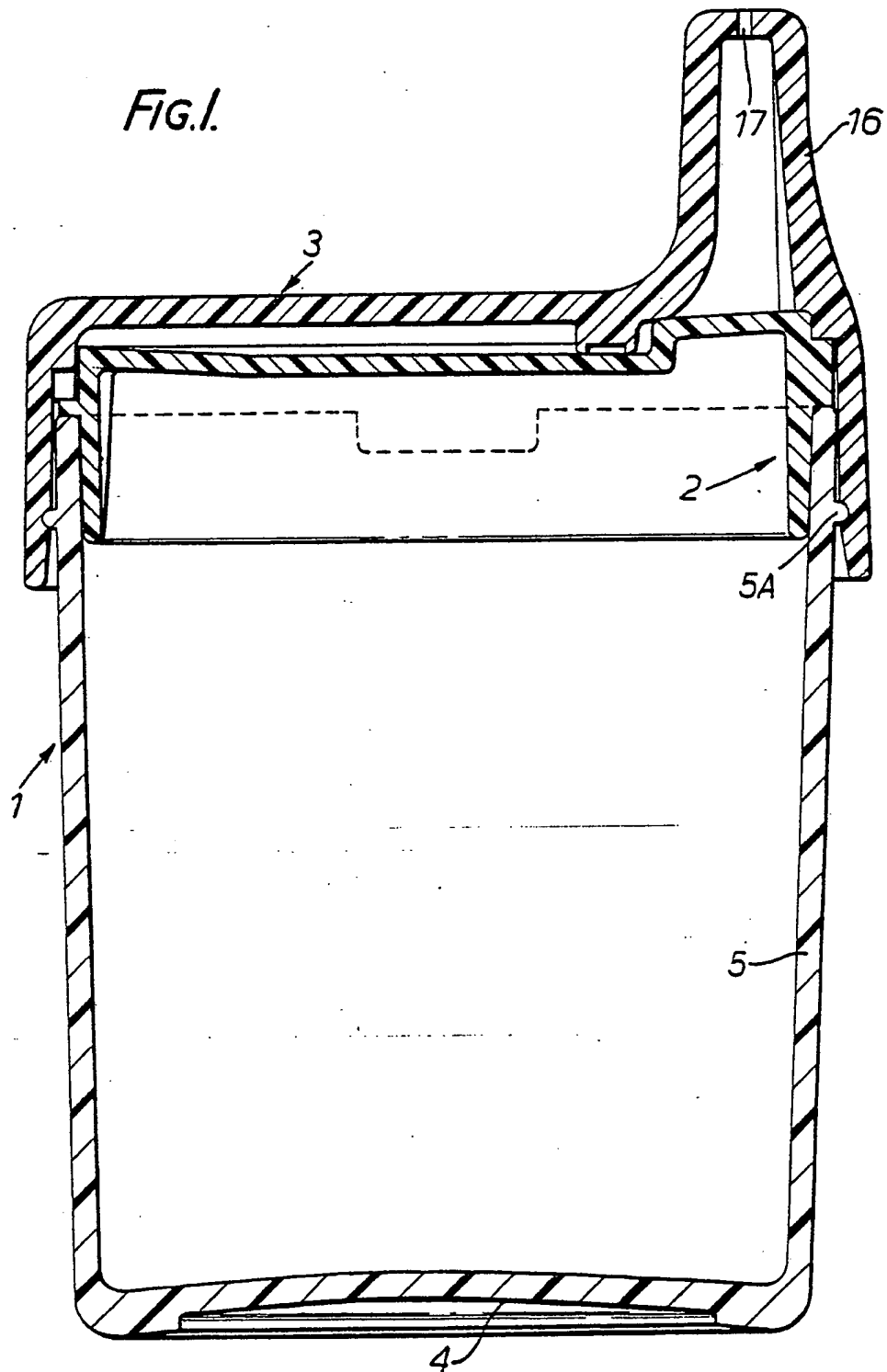
6. A liquid dispenser according to claim 5, further characterised in that the control surface (15) which is not on the lid (3) is located on a removable plate (2) fitted to the top of the container (1) for the liquid, the removable plate (2) preferably also including at least one aperture (9) extending there-through for the passage of liquid through the plate (2) towards the outlet member (16), the removable plate and the container (1) ideally including means (8, 7) for locating the plate (2) at a defined orientation with respect to the container (1).

7. A liquid dispenser according to claim 6, wherein the removable plate (2) incorporates a drainage hole (10) for draining liquid back into the container (1) and the lid (3) includes a cover portion (20) for sealing off the drainage hole (10) when in the closed position, the upper face (11) of the lid preferably being dishd to direct liquid towards the drainage hole (10).

8. A liquid dispenser substantially as herein described with reference to the accompanying drawings.

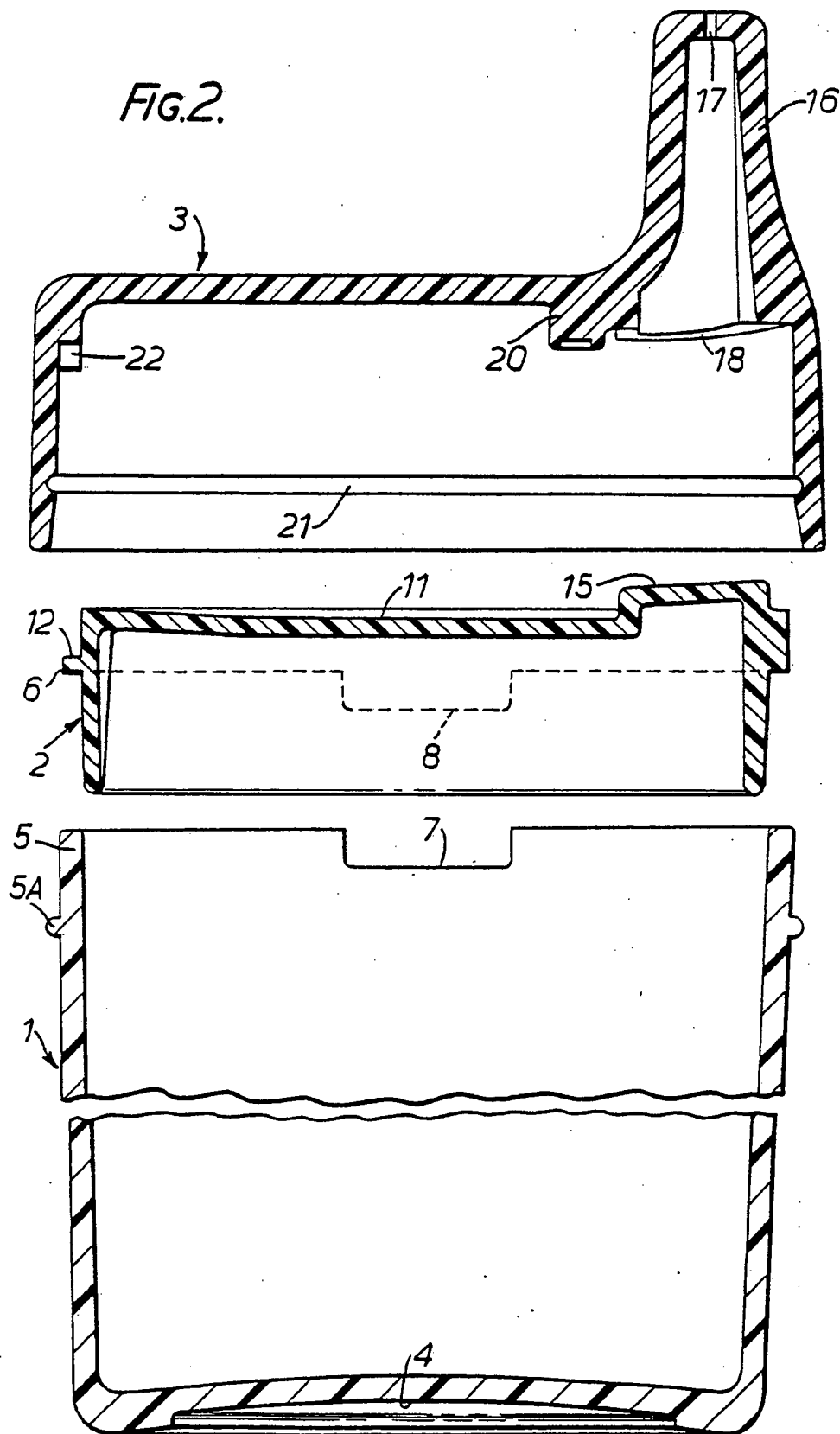
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FIG.1.

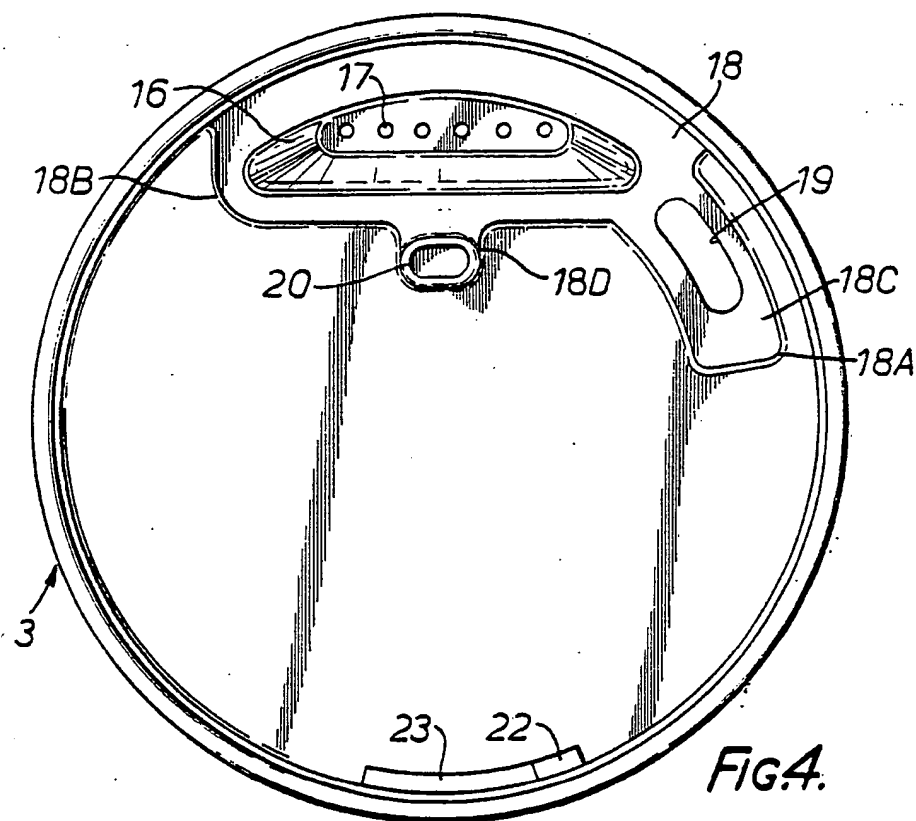
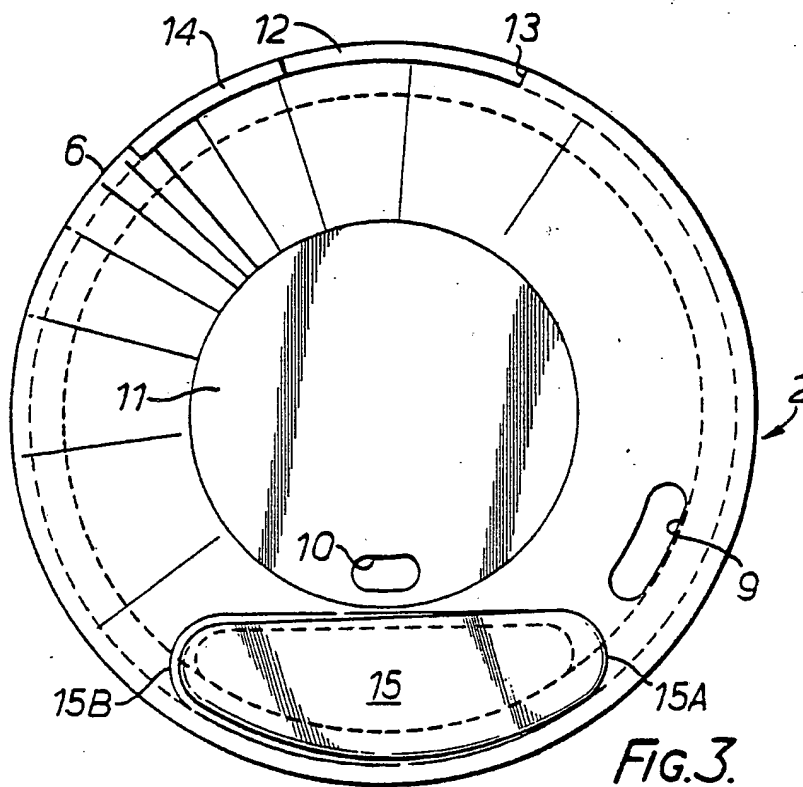


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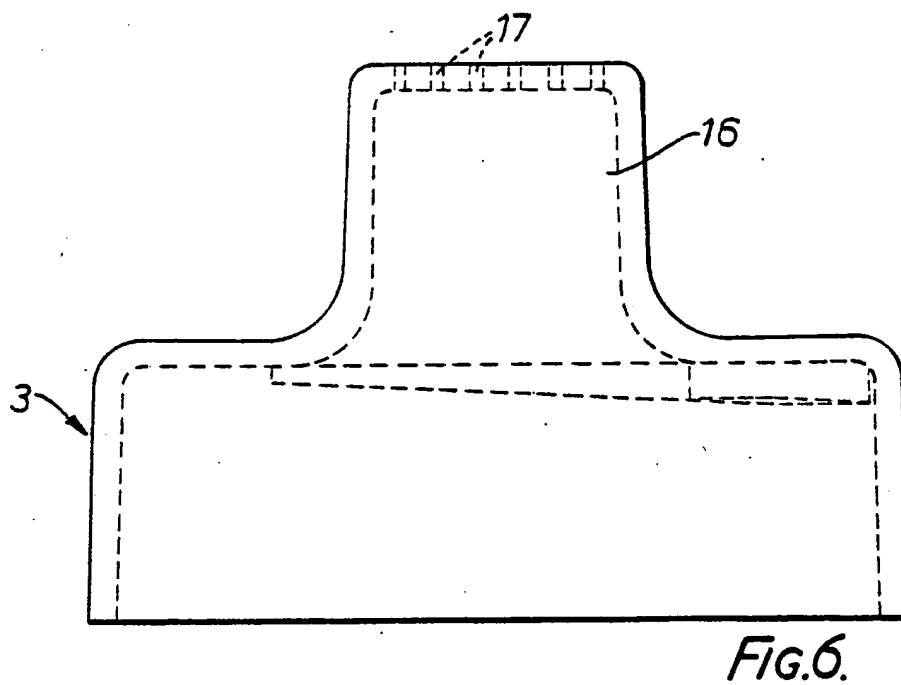
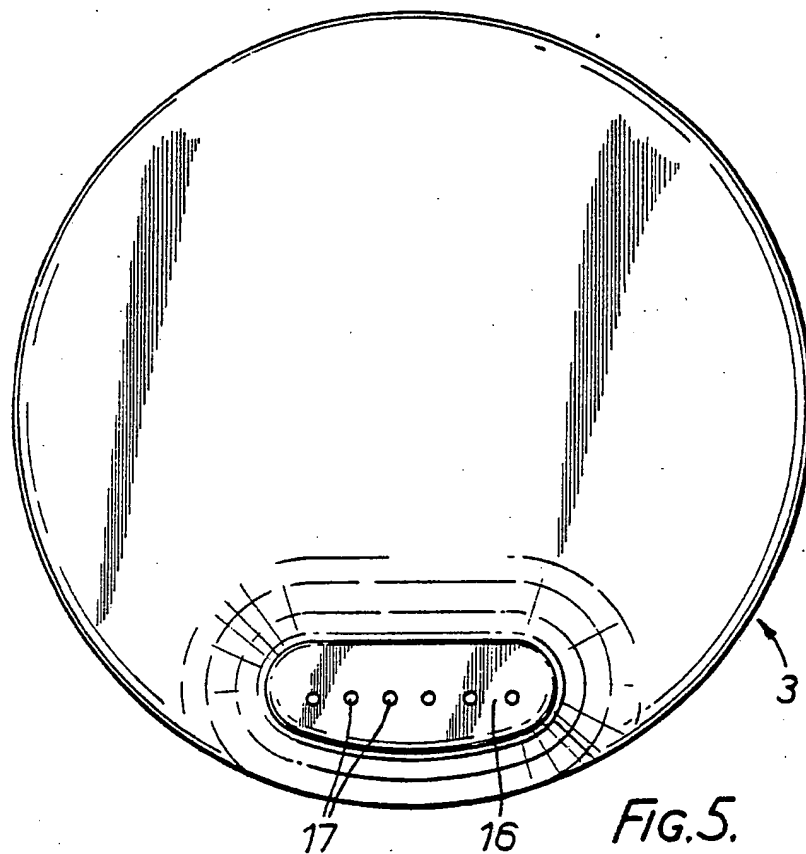
FIG.2.



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INTERNATIONAL SEARCH REPORT

International Application No PCT/GB 85/00098

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) * According to International Patent Classification (IPC) or to both National Classification and IPC IPC ⁴ : A 47 G 19/22																							
II. FIELDS SEARCHED <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black; margin: 5px 0;">Minimum Documentation Searched ⁷</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; border-bottom: 1px solid black;">Classification System</td> <td style="border-bottom: 1px solid black;">Classification Symbols</td> </tr> <tr> <td style="padding: 5px;">IPC⁴</td> <td style="padding: 5px;">A 47 G; B 65 D</td> </tr> </table> <div style="border-top: 1px solid black; padding-top: 5px; margin-top: 5px;"> Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched ⁸ </div>			Classification System	Classification Symbols	IPC ⁴	A 47 G; B 65 D																	
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IPC ⁴	A 47 G; B 65 D																						
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Category ⁹</th> <th style="width: 60%;">Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²</th> <th style="width: 30%;">Relevant to Claim No. ¹³</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: top;">X</td> <td style="vertical-align: top;">US, A, 3104039 (DIKE) 17 September 1963 see column 2, line 48 - column 7, line 3; claims; figures</td> <td style="text-align: center; vertical-align: top;">1, 2, 8</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">A</td> <td></td> <td style="text-align: center; vertical-align: top;">3, 4, 7</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">Y</td> <td></td> <td style="text-align: center; vertical-align: top;">5, 6</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">Y</td> <td style="vertical-align: top;"> <div style="text-align: center;">--</div> AU, A, 40568/68 (CUSTOM MOULDERS) 18 February 1971 see page 4, paragraph 5; page 6, last paragraph; claims; figures <div style="text-align: center;">--</div> </td> <td style="text-align: center; vertical-align: top;">5, 6</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">Y</td> <td style="vertical-align: top;"> <div style="text-align: center;">--</div> US, A, 4190173 (MASON et al.) 26 February 1980 see column 2, line 65 - column 5, line 57; figures 1-10 <div style="text-align: center;">--</div> </td> <td style="text-align: center; vertical-align: top;">1-8</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">Y</td> <td style="vertical-align: top;"> <div style="text-align: center;">--</div> FR, A, 1013885 (BERTIN) 5 August 1952 see page 1, left-hand column, paragraph 8 - page 2, left-hand column, line 2; abstract; figures <div style="text-align: center;">--</div> </td> <td style="text-align: center; vertical-align: top;">1-8 ./.</td> </tr> </tbody> </table>			Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³	X	US, A, 3104039 (DIKE) 17 September 1963 see column 2, line 48 - column 7, line 3; claims; figures	1, 2, 8	A		3, 4, 7	Y		5, 6	Y	<div style="text-align: center;">--</div> AU, A, 40568/68 (CUSTOM MOULDERS) 18 February 1971 see page 4, paragraph 5; page 6, last paragraph; claims; figures <div style="text-align: center;">--</div>	5, 6	Y	<div style="text-align: center;">--</div> US, A, 4190173 (MASON et al.) 26 February 1980 see column 2, line 65 - column 5, line 57; figures 1-10 <div style="text-align: center;">--</div>	1-8	Y	<div style="text-align: center;">--</div> FR, A, 1013885 (BERTIN) 5 August 1952 see page 1, left-hand column, paragraph 8 - page 2, left-hand column, line 2; abstract; figures <div style="text-align: center;">--</div>	1-8 ./.
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<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>¹⁰ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p> </div> </div>																							
IV. CERTIFICATION <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;"> Date of the Actual Completion of the International Search 12th June 1985 </td> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;"> Date of Mailing of this International Search Report <div style="font-size: 1.2em; font-weight: bold;">27 JUIN 1985</div> </td> </tr> <tr> <td style="border-bottom: 1px solid black; padding: 5px;"> International Searching Authority <div style="text-align: center; font-weight: bold;">EUROPEAN PATENT OFFICE</div> </td> <td style="border-bottom: 1px solid black; padding: 5px;"> Signature of Authorized Officer <div style="text-align: right;"> G.L.M. Krunderberg </div> </td> </tr> </table>			Date of the Actual Completion of the International Search 12th June 1985	Date of Mailing of this International Search Report <div style="font-size: 1.2em; font-weight: bold;">27 JUIN 1985</div>	International Searching Authority <div style="text-align: center; font-weight: bold;">EUROPEAN PATENT OFFICE</div>	Signature of Authorized Officer <div style="text-align: right;"> G.L.M. Krunderberg </div>																	
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III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
X	GB, A, 2030121 (L.P.A.) 2 April 1980 see page 2, lines 35-56; figures 5,6	1,2,8
A	--	3-7
X	US, A, 3739938 (PAZ) 19 June 1973 see column 1, line 31 - column 2, line 27; claims; figures	1,8
A	--	3-7
X	US, A, 4121731 (OKERSTRUM) 24 October 1978 see column 2, line 32 - column 3, line 2; claims; figures	1,8
A	--	3-7
X	US, A, 2608841 (RICE) 2 September 1952 see column 1, line 40 - column 3, line 14; claims; figures	1,8
A	--	3-7
X	US, A, 4083467 (MULLINS et al.) 11 April 1978 see column 2, line 26 - column 3, line 58; claims; figures	1,2,8
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A	--	3-7
A	FR, A, 1437341 (TURNWALD) 21 March 1966	
A	US, A, 3412892 (WAKSMAN et al.) 26 November 1968	
A	FR, A, 786939 (EVANS) 14 September 1935	
A	US, A, 3653559 (DREPS et al.) 4 April 1972	
A	US, A, 2970724 (LACY) 7 February 1961	

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON

INTERNATIONAL APPLICATION NO. PCT/GB 8500098 (SA 8957)

This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 19/06/85

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 3104039		None	
AU-A- 4056868		None	
US-A- 4190173	26/02/80	GB-A- 1604557 CA-A- 1117486	09/12/81 02/02/82
FR-A- 1013885		None	
GB-A- 2030121	02/04/80	FR-A, B 2437355 DE-A- 2937393 JP-A- 55048067 CH-A- 632462	25/04/80 03/04/80 05/04/80 15/10/82
US-A- 3739938	19/06/73	None	
US-A- 4121731	24/10/78	None	
US-A- 2608841		None	
US-A- 4083467	11/04/78	None	
US-A- 4437576	20/03/84	None	
FR-A- 1437341		None	
US-A- 3412892		None	
FR-A- 786939		None	
US-A- 3653559	04/04/72	None	
US-A- 2970724		None	

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